

**REMARKS**

Reconsideration of the Office action mailed on January 24, 2005 is requested in view of the following remarks.

**Special Circumstances**

The Examiner asked applicant to point out any material information from co-pending applications listed as parents to the instant application if the criteria for materiality applies and if the examination record provides reason for applicant to believe that the Examiner has not considered such information. Applicant has previously identified applications and believes that identification satisfies the duty of disclosure. Applicant is also attaching an updated list of applications and patents to this document. The Examiner is requested to inform applicant if further information is needed.

**Claim Rejections – 35 USC 103**

Claims 1-6, 9, 12-14, 17 and 21 were rejected under 35 USC 103(a) as obvious in light of Friemann (US Patent 3,858,095) combined with Masuda (US Patent 5,231,359). That rejection is traversed.

The Examiner says Friemann discloses a woodworking machine "with a capacitance type detection system, wherein the blade forms part of the circuit." (Office action, 3.) Applicant is uncertain what the Examiner means by the phrase "capacitance type detection system." If the Examiner means Friemann discloses a contact detection system that "includes a capacitive coupling adapted to impart an electrical signal onto the cutting tool," as required by claims 1-6 and 9, then applicant disagrees. There is no capacitive coupling in Friemann adapted to impart an electrical signal onto the cutter. Any signal on the cutter in the system disclosed by Friemann is imparted by a

conductive coupling through rollers 12. Friemann explicitly discloses a *conductive* coupling via rollers 12; it does not disclose any type of *capacitive* coupling. (Friemann, column 3, lines 7-20.)

Claims 1-6 and 9 also specify that the "capacitive coupling comprises at least a portion of the shaft as one conductive plate." The shaft at issue is the shaft on which the cutting tool is mounted. The Examiner recognizes that Friemann fails to disclose this limitation, but says Masuda discloses an equivalent structure. (Office action, 4.)

Masuda, however, should not be considered in this obviousness analysis because it is non-analogous art and therefore outside the proper scope and content of the art. MPEP 2141.01(a). Masuda is non-analogous art because it is outside the field of applicant's endeavor. The field of applicant's endeavor was woodworking machinery while the field of Masuda's disclosure was ceramic resonance type electrostatic sensors. Masuda is also non-analogous art because it is not reasonably pertinent to the particular problem addressed by applicant's claims. Applicant's claims 1-6 and 9 address a woodworking machine able to detect contact between a person and a cutting tool by imparting an electrical signal onto the cutting tool through a capacitive coupling with the shaft on which the cutting tool is mounted. Masuda addresses the issues of reducing the size of a ceramic resonance type electrostatic sensor, increasing the sensitivity of the sensor, providing a resonator element with an impedance that does not decrease when an object to be detected has a low impedance, allowing easy adjustment of an oscillation frequency, and providing multiple sensors which can perform accurate signal processing without causing interference. (Masuda, column 3, lines 35-56.) Masuda does not address or even mention the problem of imparting an

electrical signal onto a cutting tool through a capacitive coupling in order to detect when a person accidentally contacts a cutting tool. In fact, Masuda does not disclose or suggest a contact detection system at all – the device disclosed in Masuda senses small changes in capacitance resulting from proximity to an object. Thus, Masuda should not be considered in an obviousness analysis of the currently pending claims.

Nevertheless, even if Masuda were considered, claims 1-6 and 9 still would not be obvious because Masuda fails to disclose or suggest either "a capacitive coupling adapted to impart an electrical signal onto the cutting tool" or a capacitive coupling using "at least a portion of the shaft as one conductive plate" in the coupling. Instead, Masuda uses "[a]n electrode plate, a needle, and the like for detecting a change in capacitance of an object to be detected," and Masuda directly connects those components to a detecting portion. (Masuda, column 5, lines 41-44.) Matsuda simply does not disclose or suggest any type of capacitive coupling as required by applicant's claims. As a result, not all claim limitations are taught or suggested by the cited references, so the claims are not obvious. MPEP 2143.03.

Even if Masuda disclosed a capacitive coupling as specified in claims 1-6 and 9, which it does not, there still would have to be some suggestion or motivation in the cited references or in the knowledge generally available to one of ordinary skill in the art to combine Masuda with Friemann. If there is no such suggestion or motivation, then the references cannot be combined. MPEP 2143. There are many factors that may be considered to determine whether there is a suggestion to combine references. One factor is whether there is a reasonable expectation that the proposed combination would work. If not, then there is no suggestion to make the combination. MPEP 2143.02.

Another factor is whether the proposed combination would change the principle of operation of the device being modified. If it does, then there is no suggestion to make the combination. MPEP 2143.01. These are both well established factors that, in the case at hand, show there is no suggestion to combine Friemann and Masuda.

The sensor disclosed in Masuda requires components of specific size, configuration, material and electrical properties. (Masuda, columns 5-8.) For example, Figures 7A, 7B and 7C show ceramic resonator elements specifically positioned on the surfaces of a copper film of a ceramic substrate 10 in such a way to minimize mutual interference between the resonator elements. (Masuda, column 6, line 62 through column 7, line 12.) There is no reason to believe that a cutting tool and shaft as set forth in applicant's claims could be added to those components without adversely affecting the ability of the system to sense an object. Additionally, the system disclosed by Matsuda is a proximity sensor that looks for very small changes in capacitance. If that system could somehow be implemented in the band cutter disclosed in Friemann, the system would detect wood as it approached the band cutter and inadvertently trigger the brakes because the approaching wood would cause a small change in capacitance. The system in Matsuda would have to be modified in some undisclosed way to distinguish proximity to wood from contact with a person, but there is no teaching or suggestion how to make such a modification. Because of issues such as these, there is no reasonable expectation that the system disclosed in Matsuda could be successfully implemented in a band cutter as shown in Friemann, and therefore the claims are not obvious. MPEP 2143.02.

There is also no suggestion to combine Friemann and Masuda because the resulting combination would change the principle of operation of Friemann. The principle of operation of the device disclosed in Friemann is to detect contact with the band cutter. In contrast, the principle of operation of the sensor disclosed in Masuda is to detect proximity by looking for small changes in capacitance. MPEP 2143.01.

The only suggestion identified by the Examiner to combine Friemann and Masuda was the general desire for an "enhanced detection system." (Office action, 4.) The general desire for a better system, however, cannot be a sufficient motivation to combine references. If it were, then almost no improvement could be patented because one always desires "enhanced" products. Rather, there must be some express or implicit teaching, suggestion or motivation in the prior art to make the specifically claimed combination. Expressed differently, it is not the desire to make something better but the solution that must be suggested or taught, and that suggestion "must be clear and particular." In re Dembicza, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) (citations omitted). In the case at hand, there simply is no such clear and particular suggestion, and therefore, applicant's claims are not obvious in light of Friemann and Masuda.

Claims 2-6 include additional limitations that further distinguish the cited references. Claim 2 requires an electrically insulated shaft. Claim 3 requires electrically insulating components disposed between bearings and the shaft. Claim 4 requires electrically insulating components disposed between bearings and a frame. Claim 5 requires sense electrodes to monitor an electrical signal on the cutting tool. Claim 6 specifies that one or more sense electrodes are disposed adjacent the shaft. Friemann

and Matsuda both fail to disclose any of these limitations and therefore these claims cannot be obvious in light of those references. MPEP 2143.03.

Claims 12-14 all describe a woodworking machine with "a contact detection system adapted to detect contact between a person and the cutting tool, wherein the contact detection system includes a first electrode capacitively coupled to the cutting tool to impart a signal to the cutting tool and a second electrode capacitively coupled to the cutting tool to monitor the signal imparted to the cutting tool." Friemann and Matsuda do not disclose first and second electrodes as specified, and therefore, these claims are not obvious in light of those references. MPEP 2143.03. Claim 13 further requires excitation circuitry, and claim 14 requires sensing circuitry, configured as stated in the claims, none of which is disclosed in the cited references.

Claims 17 and 21 describe a woodworking machine with a cutting tool, a contact detection system, and "a capacitive coupling between the contact detection system and the cutting tool, where the capacitive coupling comprises at least a portion of the cutting tool as one conductive plate, a second conductive plate adjacent to and spaced apart from the cutting tool so that there is a gap between the cutting tool and the second conductive plate, and a dielectric in the gap between the cutting tool and second conductive plate." Nothing in Friemann or Matsuda discloses using at least a portion of the cutting tool as one conductive plate and a second conductive plate adjacent to the cutting tool. Claims 17 and 21 further specify that the contact detection system "is configured to impart an electrical signal onto the cutting tool through the capacitive coupling, and to detect contact between a person and the cutting tool based on changes in the electrical signal imparted to the cutting tool." Friemann and Matsuda fail to

disclose a system configured to impart an electrical signal onto a cutting tool through a capacitive coupling, as explained above.

Claims 1-6, 9, 10, 12-14, 17, 19, 20, 22 and 23 were rejected under 35 USC 103(a) as obvious in light of Lokey (US Patent 3,785,230) combined with Masuda. That rejection is traversed.

First, the Examiner says Lokey discloses a contact detection system as required by applicant's claims. That is incorrect. Lokey explicitly discloses a proximity detection system, not a contact detection system, as shown by the following quote:

The movement of the brakes 24 into engagement with the blade 13 is virtually instantaneous and the blade 13 stops *prior to even the slightest contact* with the body of the user regardless of the speed of movement of the user's finger toward a contacting position with respect to the blade 13. (Lokey, column 2, lines 25-31, emphasis added.)

If Lokey were modified to detect contact instead of proximity, then Lokey could not prevent serious injuries because the brakes in Lokey cannot operate quickly enough to stop the blade after contact has occurred. Specifically, the solenoids in Lokey require time to energize and move the brakes into contact with the blade. Detecting proximity gives the solenoids time to operate before a serious injury occurs, but detecting contact does not. Thus, modifying Lokey to include a contact detection system would make the system unsatisfactory for its intended purpose, which is impermissible in an obviousness analysis. MPEP 2143.

The fact that Lokey fails to disclose a contact detection system means that not all claim limitations are taught or suggested by the cited references, and as a result, the claims cannot be obvious in light of Lokey and Masuda. MPEP 2143.03.

Claims 1-6, 9 and 19 specify that the "capacitive coupling comprises at least a portion of the shaft as one conductive plate." Claim 10 specifies that "at least a portion of the outer surface of the arbor is one of the conductors" in a capacitive coupling. Claims 12-14 require first and second electrodes arranged as specified. Claims 17, 20, 22 and 23 specify that the "capacitive coupling comprises at least a portion of the cutting tool as one conductive plate [and] a second conductive plate adjacent to and spaced apart from the cutting tool so that there is a gap between the cutting tool and the second conductive plate." The Examiner recognized that Lokey fails to disclose these limitations, but says Masuda discloses equivalent structure. (Office action, 5.) Masuda, however, as explained above, is non-analogous art and therefore should not be considered. But even if Masuda is considered, it still fails to disclose these limitations for the reasons given previously. There is also no suggestion to combine Lokey and Masuda for the same reasons why there was no suggestion to combine Friemann and Masuda.

Claim 2 also requires an electrically insulated shaft. Claim 3 requires electrically insulating components disposed between bearings and the shaft. Claim 4 requires electrically insulating components disposed between bearings and a frame. Claim 5 requires sense electrodes to monitor an electrical signal on the cutting tool. Claim 6 specifies that one or more sense electrodes are disposed adjacent the shaft. Claim 10 also require an excitation system capacitively coupled to the arbor. Claim 14 recites sensing circuitry coupled to a second electrode. Claim 19 requires a conductive plate substantially concentric with a portion of the shaft. Claim 20 specifies that the conductive plate substantially encircles the portion of the shaft comprising part of the

capacitive coupling. Lokey and Matsuda both fail to disclose any of these limitations and therefore these claims cannot be obvious in light of those references. MPEP 2143.03.

Claim 24 was rejected under 35 USC 103(a) as obvious in light of Lokey combined with Masuda and Richards (US Patent 2,737,213). That rejection is traversed for the same reasons given above concerning claim 17.

**Claim 16**

Applicant notes that no rejection or objection has been raised against claim 16.

**Conclusion**

Applicant submits that all of the issues raised in the Office action mailed January 24, 2005 have been addressed and overcome, and therefore, the application should be allowed.

Respectfully submitted,

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